

REMARKS

Upon entry of this Reply, claims 1, 2, 4, 5, 16, 18, 20, and 22 will remain in this application. Claims 3, 6-15, 17, 19, 21, and 23-55 have been canceled. Reconsideration of the application is requested.

Claims 2, 4, and 16 have been amended above after consideration of the comments provided by the Examiner in section 2 on page 2 of the Office Action. Claim 17 has been canceled. All claims of this application should now be in proper form.

Reconsideration of the rejections under 35 U.S.C. §102(b) and the rejection under 35 U.S.C. §103(a) is requested. It is respectfully submitted that neither U.S. Patent 5,969,001 to Kawai nor U.S. Patent 5,337,872 to Kawamura et al. discloses or suggests a synchronizer ring comprising, in addition to other elements, a wear-resistant tribological coating which is thermally sprayed so as to have a porous microstructure produced without machining and which contains a maximum of approximately 40% by weight of a solid lubricant having a particle size of no more than approximately 180  $\mu\text{m}$  as twice amended claim 1 defines.

The Kawai patent discloses a synchronizer ring 10 having a friction material layer 12 on the inner circumference of a ring-shaped structural body 11. Various manufacturing methods are discussed from line 14 in column 3 to line 18 in column 4 of the Kawai patent. None of these methods results in a

thermally sprayed tribological coating as claim 1 requires. Advantages of the thermally sprayed coating of the invention are clearly and specifically discussed in lines 7-13 of paragraph "[0007]" of this application, and are now reflected in claim 1.

The Kawai patent also fails to disclose or suggest a tribological coating which contains a maximum of approximately 40% by weight of a solid lubricant as claim 1 requires. The carbon material discussed in the Kawai patent instead constitutes 30-70% by weight of the friction material layer 12 (see, for example, column 2, lines 21-27 of the Kawai patent). Although the comments set forth by the Examiner in section 7 on pages 4-5 of the Office Action are noted, nothing properly relied on by the Examiner suggests modifying the Kawai friction material so that the carbon material discussed is limited to a maximum of 40% by weight of the layer 12.

Finally, the Kawai patent also fails to disclose or suggest a tribological coating including a solid lubricant having a particle size of no more than approximately 180  $\mu\text{m}$  as claim 1 requires. Instead, as noted by the Examiner, the artificial porous graphite particles included in friction material layer 12 have a size distribution such that not less than 50% of the entire number of particles have a particle diameter from 44 to 250  $\mu\text{m}$ . Again, although the comments set forth by the Examiner in section 7 of the Office Action are noted, nothing properly relied on by the Examiner suggests

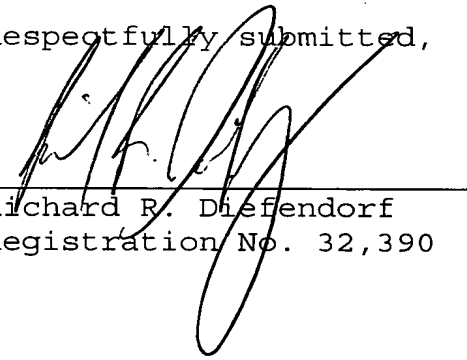
modifying the Kawai friction material so that a particle size of no more than 180  $\mu\text{m}$  is present.

Claim 1 is patentable over the Kawai patent relied on for reasons discussed above. Dependent claims 2, 4, 5, 16, 18, 20, and 22 are patentable over the Kawai patent as well.

The Kawamura et al. patent discloses a synchronizer ring having a copper alloy flame-coated film 3 formed on the inner peripheral surface of a ring body 2. As lines 37-41 in column 5 of the Kawamura et al. patent describe, the film 3 may be composed of a copper alloy of a hardness in a certain range and ceramic particles of 5 to 30% by weight dispersed uniformly in the copper alloy. Although the Kawamura et al. patent specifies that the film 3 is formed to have a thickness of 70 to 200  $\mu\text{m}$  (see, for example, column 5, line 67 to column 6, line 1) and a surface roughness in a range of 20 to 60  $\mu\text{m}$  (see, for example, column 6, lines 20-25), the Kawamura et al. patent does not disclose a synchronizer ring comprising, in addition to other elements specified, a tribological coating containing a maximum of 40% by weight of a solid lubricant having a particle size of no more than approximately 180  $\mu\text{m}$ . It is respectfully submitted, therefore, that claim 1 as amended above is patentable over the Kawamura et al. patent. Dependent claims 2, 4, 5, 16, 18, 20, and 22 are patentable over the Kawamura et al. patent as well.

This application is now in condition for allowance. Should the Examiner have any questions after considering this Reply, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,



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Richard R. Diefendorf  
Registration No. 32,390

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CROWELL & MORING, LLP  
P.O. BOX 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 628-8800  
Facsimile No.: (202) 628-8844  
RRD:msy

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In each claim appearing below, deletions are bracketed and additions are underlined.

1. (Twice amended) A synchronizer ring comprising:  
a ring body which has a sliding region, and  
a wear-resistant tribological coating with which the sliding region is provided,  
wherein the tribological coating is [a] thermally sprayed [coating which] so as to have a porous microstructure produced without machining,  
wherein said tribological coating contains a maximum of approximately 40% by weight of a solid lubricant, and  
wherein the solid lubricant has a particle size of no more than approximately 180  $\mu\text{m}$ .

2. (Twice amended) The synchronizer ring according to Claim 1, wherein the solid lubricant is selected from the group consisting of titanium dioxide ( $\text{TiO}_2$ ), calcium fluoride ( $\text{CaF}_2$ ), hexagonal boron nitride (h-BN), graphite, lead (Pb) [or] and molybdenum sulphide ( $\text{MoS}_2$ ) [or any desired mixture of these substances].

4. (Twice amended) The synchronizer ring according to Claim 1, wherein the thermally sprayed coating furthermore contains at least one material selected from the group consisting of tin [and/or], zinc [and/or], silicon [and/or], nickel [and/or], manganese [and/or], copper [and/or], aluminum [and/or], one or more of their oxides [and/or], one or more of

their carbides [and/or], one or more of their nitrides [and/or] and carbon.

16. (Twice Amended) The synchronizer ring according to Claim 2, wherein the thermally sprayed coating furthermore contains at least one material selected from the group consisting of tin [and/or], zinc [and/or], silicon [and/or], nickel [and/or], manganese [and/or], copper [and/or], aluminum [and/or], one or more of their oxides [and/or], one or more of their carbides [and/or], one or more of their nitrides [and/or] and carbon.